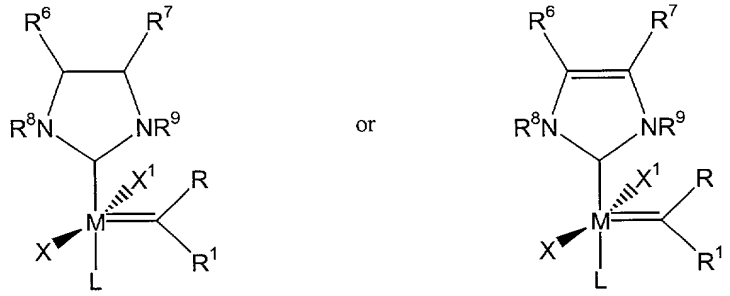
ABSTRACT

The invention is directed to the cross-metathesis and ring-closing metathesis reactions between geminal disubstituted olefins and terminal olefins, wherein the reaction employs a Ruthenium or Osmium metal carbene complex. Specifically, the invention relates to the synthesis of α-functionalized or unfunctionalized olefins via intermolecular cross-metathesis and intramolecular ring-closing metathesis using a ruthenium alkylidene complex. The catalysts preferably used in the invention are of the general formula



wherein:

M is ruthenium or osmium;

X and X^1 are each independently an anionic ligand;

L is a neutral electron donor ligand; and,

R, R^1 R^6, R^7, R^8, and R^9 are each independently hydrogen or a substituent selected from the group consisting of C_1-C_{20} alkyl, C_2-C_{20} alkenyl, C_2-C_{20} alkynyl, aryl, C_1-C_{20} carboxylate, C_1-C_{20} alkoxy, C_2-C_{20} alkenyloxy, C_2-C_{20} alkynyloxy, aryloxy, C_2-C_{20} alkoxycarbonyl, C_1-C_{20} alkylthio, C_1-C_{20} alkylsulfonyl and C_1-C_{20} alkylsulfinyl.